

Milton-Freewater, March 26, 2021

Rick Boatner  
2021 OISC Chair  
Oregon Invasive Species Council

**Request For Invasive Species Emergency Funding To Eradicate Apple Maggot Fruit Fly in Apple Production Area in Eastern Oregon**

Dear Chair:

I am writing to you to request your financial support in the direct control and eradication of the invasive apple maggot population recently detected in the orchard production area of Milton-Freewater in eastern Oregon.

Here is a summary from the Department of Agriculture about the invasive fruit fly, the apple maggot:

In 1979, the Apple maggot (AM), *Rhagoletis pomonella* (Walsh) (Diptera, Tephritidae) native to the eastern United States, was first reported in Oregon. Since then it has been found in all counties in western Oregon and east to Wasco County, and in the Pendleton area of Umatilla County, posing a serious threat to the apple production in Oregon.

The Oregon Department of Agriculture (ODA) has been trapping for AM in Eastern Oregon, in particular in the Milton-Freewater area, for more than 35 years. In 2000, one apple maggot was recorded in Echo; three were recorded in Arlington, and one each in Moro and Condon. Eradication efforts immediately implemented by ODA, OSU and local authorities in Arlington and Echo were successful in eradicating the apple maggot population. In 2001, more than 60 apple maggots were caught in southwest Pendleton on ornamental hawthorn. A delimitation survey in 2002 recorded 387 specimens around the Blue Mountain Apartments in southwest Pendleton. In a combined effort between homeowners, OSU, ODA and the Milton-Freewater private apple industry, host trees were either removed or sprayed. Due to economic limitations the spray actions were stopped after two applications. No AM has been caught during continuous surveying since 2004 conducted by ODA and OSU for the Milton-Freewater area.

Since 2018, Umatilla County, the County Commissioners and Pest Board, the Oregon Department of Agriculture, and local producers, have been collaborating to establish an

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AM-free zone in the Milton-Freewater orchard production area and to eradicate or contain the Pendleton AM infestation. With direct support of the Blue Mountain Horticultural Society, ODA continued with the AM detection survey in the Milton-Freewater apple production area in 2020 to protect the northeastern Oregon apple export market. Detection traps were placed at 99 sites in the Milton-Freewater area, and for the first time, a single fly was captured at each of 3 different locations. In response to each capture additional delimitation traps were placed in orchards and other suitable habitats within a half mile of positive traps. No additional flies were found. These captures have triggered planning and preparation for extensive trapping and eradication efforts in 2021 following FAO guidelines (ISPM 26 2015).

If AM were to establish in the Milton-Freewater area, local apple production would be put at risk and pesticide use would likely significantly increase. These increased pesticide applications by commercial apple producers as well as homeowners may result in increased levels of pesticide residues potentially impacting Oregon watersheds and riparian forest trees.

There are 3,500 acres of tree fruit currently in the Milton-Freewater growing district, all of which would be affected if a change in pest free status from Apple maggot were to occur. In 2020, there was limited ODA funding available for this, so the Blue Mountain Horticulture Society funded a limited apple maggot trapping program to maintain our status. During this sampling we caught our first Apple Maggot in the valley. In response to this and in an effort to satisfy the Food and Agriculture Organization of the United Nation's International Standards for Phytosanitary Measures (ISPM 26 2015), ODA recommends that the trapping program is expanded to ensure the Milton-Freewater growing district is declared pest free and that proper delimiting trapping is followed to help with any future 2021 eradication plans. Our fear is that without external support it is unlikely that the program can be executed.

For the Milton-Freewater grower, a change from Fly Free-Pest Free Area status would mean losing the benefit of being in an early harvesting district. In recent years, the early market prices for each variety have been the only times they are profitable. For packing houses and shippers, such a downgrading in status would make it more complicated to store and sell fruit. While this area is considered a large production area in the state of Oregon, most of our fruit is marketed by Washington sales groups. Box sales will be lost while waiting for the required 40-day cold treatment to expire. The record low crop of 2020 would only increase the impact of having to wait to ship in 2021. We estimate that collectively such a change in status could cost up to \$19,400,000 in this next growing season alone.

In closing, it is very important to the survival of the Milton-Freewater tree fruit industry that we maintain our Apple Maggot Pest Free Status. We are asking for any support the Oregon Invasive Species Council might be able to approve from its Emergency Account. The ODA has prepared a cost estimate for the 2021 survey and eradication efforts in close collaboration with the OSU Extension Service, the USDA-ARS, and our industry.

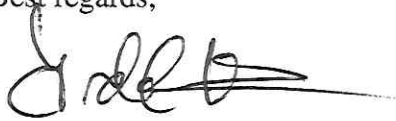
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The ODA can contribute approximately \$38,000 to the survey and eradication efforts for 2021, but has no additional funding available to completely cover the costs. The industry will contribute with personnel to set up the traps and some costs of mitigation.

I would be glad to provide further details on our collaborative Apple Maggot eradication project if you have additional questions. Please see below a table with ODA's response plan, budget, timeline, performance measures and PRA (pest risk analysis).

Thank you for your consideration and support to keep Apple Maggot out of eastern Oregon.

Best regards,



Sincerely,

Todd Davis  
President BMHS

Tom Waliser Grower	Dave Hansen Grower	Dennis Burks Grower	Jacob Morris Grower
Sean Roloff BMHS Board Member	Dave Morris Grower	Barbara Roloff Grower	Jodi Emtman Grower
Jared Brown BMHS Board Member	Dana Dibble Grower	Rudy Lara Grower	Leonard Brown Grower
Vern Rodighiero BMHS Board Member	Gay Dodd Grower	Dan Kezele Packer	Tony Ruiz Grower
Angie Lefore BMHS Board Member	Ron Lefore Grower/Packer	James Foreman Grower	Tamara Lefore Grower

**Work Plan, Budget and Assessment**

<p><b>Response Plan</b></p>	<p>ODA has prepared a response plan for AM that includes a treatment plan and a delimitation program for the positive sites in and around the Milton-Freewater orchard production area.</p>	<p>We plan to use a variety of methods to delimit and eradicate the incipient apple maggot population in the Milton-Freewater commercial orchard production area, including AM traps in a density recommended by ISPM (International Standard of Phytosanitary Measures) and ODA, removal of feral apple trees to reduce feral reservoirs of the invasive pest, applications of approved insecticides, including GF-120. The response is being prepared in close collaboration by ODA, USDA-ARS, OSU Extension and the Industry.</p>		
<p><b>Budget</b></p>	<p>This is a collaborative effort of various partners</p>	<p><u>Costs of the 2021 season:</u></p> <p><b>Personnel</b> costs for delimitation survey and eradication activities: \$81,310</p> <p><b>Travel:</b> \$3,169</p> <p><b>Supplies</b> (traps and lures, insecticides): \$20,264</p> <p><b>TOTAL in 2021:</b>  <b>\$104,743</b></p>	<p><u>Contributions:</u></p> <p><b>ODA</b> through Specialty Crop Block Grant Program: \$32,000</p> <p><b>ODA:</b> \$4,743 (in-kind personnel)</p> <p><b>ODA:</b> \$35,000 (E-Board request)</p> <p><b>Industry:</b> \$11,500 (in-kind personnel)          \$12,500 (in-kind treatment costs)</p>	<p>Budget request to OISC Emergency Fund: \$30,000</p>
<p><b>Timeline</b></p>	<p>We will set up the</p>	<p>Foliar applications of</p>		

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	delimitation traps in middle of May until the end of October; eradication activities start around 7-10 days of the emergence of the invasive apple maggot adults	approved insecticides, including GF-120 are scheduled around 7 to 10 days around the emergence time of the AM adults, which is usually around early June		
<b>Performance measures</b>	We will place an additional 250 AM traps as part of the delimitation trapping program, following the international standard protocol for trapping (attached; also see maps attached)  One to two foliar applications will be conducted in May/June of 2021	We have attached a map of the eradication areas in Milton-Freewater		
<b>PRA</b>	ODA performed a PRA, which is attached.			

Trap densities suggested for *Rhagoletis* spp. (extracted from ISPM 26 [2015] Table 4e)

Trapping	Production area	Trap density/km <sup>2</sup>		Points of entry
		Marginal	Urban	
Monitoring survey, no control	<b>0.5–1.0</b>	<b>0.25–0.5</b>	<b>0.25–0.5</b>	0.25–0.5
Monitoring survey for suppression	2–4	1–2	0.25–0.5	0.25–0.5
Delimiting survey in an FF-ALPP after an unexpected increase in population	3–5	3–5	3–5	3–5
Monitoring survey for eradication	<b>3–5</b>	<b>3–5</b>	<b>3–5</b>	3–5
Detection survey in an FF-PFA to verify pest absence and for exclusion	<b>1</b>	<b>0.4–3</b>	<b>3–5</b>	4–12
Delimitation survey in a PFA after a detection in addition to detection survey	<b>20–50</b>	<b>20–50</b>	<b>20–50</b>	20–50

Putative 2021 detection (yellow) and delimitation (red, eradication zones) trap locations in the Milton-Freewater area.



**Economic Risk Analysis: Umatilla County and the Apple Maggot, *Rhagoletis pomonella* (Walsh)**

**Name:** Apple maggot, *Rhagoletis pomonella* (Walsh)

**Origin, biology, hosts:**

The apple maggot, *Rhagoletis pomonella* (Walsh) is a significant pest for apple crops because the species feeds on apples and lays eggs within the fruit. The hatched maggots burrow tunnels within the apples and cause them to fall prematurely and create unsightly brown spots. It has been a serious pest of apples in the eastern United States and Canada for over 100 years (Dean and Chapman 1973). It has been found throughout the east coast from Quebec in the north to as far south as Florida and from the Atlantic coast to parts of the Dakotas, Iowa, and eastern Texas, but until recently not the western United States.

In 1979 the apple maggot was reported for the first time from a backyard tree in Portland, Oregon (AliNiazee and Penrose, 1981). An examination of the Oregon Department of Agriculture (ODA) tephritid collection indicated that an apple maggot fly had been collected in 1951 at Rowena near Hood River, Oregon on a yellow sticky trap. The specimen was originally identified as the snowberry maggot, *Rhagoletis zephyria* Snow, by the ODA but has recently been re-identified as *R. pomonella* (AliNiazee and Westcott, 1986). California quarantine inspection records show apple maggot infested fruit have been intercepted at border patrol stations since around 1950. It is probable that the apple maggot has been accidentally introduced to the West many times during the past decades.

Indigenous to northeastern United States and adjacent portions of southeastern Canada, apple maggot is thought to have originally used native hawthorn (*Crataegus* spp.) berries for larval development, undergoing a host transference to *Malus* after its introduction into the New England area (Dean and Chapman 1973). Bush (1966) reports that this host shift was relatively recent, since this species was first described in 1867 (Walsh 1867), ca. 200 years after the apple was brought to our country from Europe. Host diversification has continued: Peach, pear, cherry, plum, chokeberry, cranberry, dogwood, and fruits of the Japanese roses, *Rosa rugosa* and *Rosa carolina*, can also host apple maggots. However, apple maggots are not usually a serious pest of plums, cherries, and pears. Apple and hawthorn infesting races are now generally distributed over the eastern half of the continent, extending from New York south to Florida and west to North Dakota and eastern Texas. Another disjunct population is known to occur in the highlands of central Mexico. The apple race does not extend as far north as the hawthorn race. Southward it follows the Appalachian Mountains into northern Georgia. No apple infesting forms are known from the remaining tier of southern states (Bush 1969).



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It appears that the apple maggot has become a serious threat to the Pacific Northwest apple industry. Establishment of this pest has already resulted in the discussion of new quarantine regulations capable of restricting existing, as well as future, markets. Should the apple maggot prove to be a key pest, at least two additional summer cover sprays will be required, costing Oregon and Washington apple growers an estimated \$5.5 million annually, and this could disrupt integrated pest management programs now in operation.

The ODA conducted a survey in 1980 to measure the distribution of the apple maggot, and traps in southwestern Washington showed apple maggot distribution in and around Vancouver, Washington, a suburb of Portland, Oregon. The apple maggot has spread to the Northwest, including Washington, Oregon, and northern California. They are believed to have been spread via contaminated apples, most likely to have been accidentally introduced to the western United States multiple times over the past few decades. This theory is supported by lack of *R. pomonella* infestation on *Crataegus douglasii* Lindl. in Washington, Oregon, and Idaho, implying that the fly in these regions is not native on hawthorn. There are recorded sightings of *R. pomonella* from Southern Utah and New Mexico, as well as in the Sierra Madre Oriental Mountains and the Altiplano central highlands of Mexico.

By 2000 it was found in most western Oregon and Washington counties. The apple maggot remains a potential threat to the commercial Northwest apple and pear industry in the Columbia Basin. Fortunately, the apple maggot seems to attack only apple and hawthorn in Oregon and Washington, and so far has not been found on pear. Early cultivars of apples are particularly susceptible to damage. There is a quarantine on the movement of fruit from Washington and Oregon counties known to have this pest.

### **RISK RATING SUMMARY**

**Relative Risk Rating:** VERY HIGH

**Numerical Score (1-9 scale):** 9

**Uncertainty:** LOW

### **RISK RATING DETAILS**

**Establishment Potential:** HIGH

Eastern Oregon's climate and host plant distribution are ideal for apple maggot establishment.

Because of the pest's widespread distribution, and an extensive and essential continuum of un-sprayed host plants, it is highly probable that apple maggot will become established in all suitable habitats east of the Cascade Mountains.

**Spread Potential:** HIGH

Oregon Department of Agriculture has been monitoring for apple maggot in Umatilla County for several decades. A local AM population in Pendleton has been monitored and

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also under eradication efforts to prevent spread outside the City. Surveys for the orchard production area in Milton-Freewater have been negative until 2020.

**Environmental Impact Potential: LOW**

The native host of AM is hawthorn, which is widespread along riparian areas in eastern Oregon.

**Economic Impact Potential: HIGH**

**Apple production in Milton-Freewater, Umatilla County, Oregon:**

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Oregon Crop / Commodity	Harvested Acreage	Production Value (\$)	Estimated Crop Damage Costs (\$)	Estimated Quarantine Costs (\$)	Total Economic Impact (\$)
Apples	3,560	30,269,000	350,000	19,400,000	19,750,000

**References**

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- ISPM 26. 2015. International standards for phytosanitary measures. Establishment of pest free areas for fruit flies (Tephritidae). <https://www.ippc.int/en/core-activities/standards-setting/ispms/>